present only the "new" doctorates of Science and Letters connote any considerable intellectual achievement (though they all mean much spare cash), and so they are manufactured chiefly for export, and hardly half-a-dozen of the existing college tutors (of whom the present writer was unwise enough to become one) have found it desirable to take them.

There are, I know, difficulties of detail in the way even of these moderate suggestions; but even their partial and gradual adoption would abate the fascination of our examination system, and check the tendency to identify the good examinee, functioning as a good examiner, with the ideal of academic man.

F. C. S. SCHILLER.

PROF. C. A. YOUNG.

FEW astronomical books have acquired or have deserved a wider reputation than has been accorded to the "General Astronomy" of Prof. C. A. Young, and all who have profited by the accuracy and completeness of that work will regret to hear of the death of the distinguished author, who identified himself so closely with the progress of the Princeton Observatory (N.J.). Other popular works, such as "The Sun," have been well received, for Prof. Young's qualities as a writer and teacher were well known and acknowledged. But though accident may have given him distinction as a writer of elementary works, of which his long career as a teacher had shown him the necessity, he had far greater claims on our respect and gratitude. Son of a distinguished astronomer, Dr. Ira Young, of Dartmouth, he was early and severely trained in mathematics and astronomy, and for fifty years he gave of his best to forward the interests of the science he loved. Moreover, his activity synchronised with the recent development of physical astronomy; he was one of the pioneers of solar spectroscopy, and his continued and successful researches in various directions entitle him to ample recognition.

His first appointment was to the chair of mathematics in the Western Reserve College, a post from which he retired only to serve his country in a military capacity during the War of Secession. After the war, he succeeded his father as professor of astronomy at Dartmouth College, leaving that post in 1877 to accept a similar position at Princeton, where his energies found sufficient exercise during the remainder of his professional career.

Like most astronomers who have occupied themselves with solar phenomena, Prof. Young found it necessary to follow the track of many eclipses. The most famous of these is that of 1870, when he, for the first time, saw and described the now familiar appearance of the reversed Fraünhofer lines at the instant of the inner contact of the limbs of the sun and moon. Owing to the much-debated "reversing layer," which he suggested as the true cause of the flash, this eclipse has become historical. He took part in the observations of the solar eclipse of 1878 which passed over the American continent, and visited Europe in 1887 for the Russian eclipse, but without result, owing to bad weather. Onwards to 1900 he was a diligent observer of eclipses, and extended our knowledge of the sun's surroundings as well by his acute observation as by his luminous discussion of results obtained. His early explanation of the spectrum of the corona is now received practically as he gave it.

But Prof. Young's researches were not limited to exceptional opportunities. He gave constant and assiduous attention to the solar spectrum at all times, and was an indefatigable observer of the spectrum of sun-spots, repairing to favourable situations in order to secure good observing conditions. The chromosphere, no less than sun-spots, was the subject of his care, and his catalogue of chromospheric lines, begun so far back as 1872, is a memorable piece of work. Further, he was among the first to determine the velocity of the solar rotation at various heliographic latitudes by measuring the displacement of solar lines due to motion at the source of light. The spectra of planets and comets, of stars and nebulæ, were all made the subject of profound study, for his industry was as untiring as his resource was abundant. His work was recognised by the Royal Astronomical Society, which enrolled him among its associates in 1872, and many other learned societies paid him similar honours. He was the recipient of the Janssen medal of the French Academy of Sciences in 1891, but his great reward must have been the consciousness of the amount and variety of work he had accomplished for the promotion of astronomical science.

NOTES.

WE regret to announce that Prof. J. B. Pettigrew, F.R.S., Chandos professor of medicine and anatomy in the University of St. Andrews, died on January 29 in his seventy-third year.

WE observe with great regret the announcement that Mr. W. A. Shenstone, F.R.S., senior science master in Clifton College since 1880, died on Monday, February 3, at fifty-eight years of age.

A REUTER message from Brussels announces the death of M. A. Lancaster, director of the meteorological department of the Royal Observatory of Belgium at Uccle.

PROF. W. RIDGEWAY, professor of archæology in the University of Cambridge, has been elected president of the Royal Anthropological Institute.

THE French Physical Society has undertaken the publication of a collection of physical constants. The general secretary, M. H. Abraham, has issued an appeal to members of the society to assist in the collaboration.

THE King, who is patron of the Society of Arts, has granted permission to the society to prefix to its title the term "Royal," and the society will consequently in future be known as the "Royal Society of Arts."

ON Tuesday next, February 11, Prof. Stirling will begin a course of six lectures at the Royal Institution on "Membranes: their Structure, Uses, and Products." The Friday evening discourse on February 14 will be delivered by Dr. C. W. Saleeby on "Biology and History," and on February 21 by Sir Oliver Lodge on "The Ether of Space."

SIR PHILIP WATTS, K.C.B., F.R.S., Director of Naval Construction, has been elected a member of the Athenæum Club under the rule which empowers the annual election by the committee of three persons "of distinguished eminence in science, literature, the arts, or for public services."

THE annual general meeting of the Iron and Steel Institute will be held on Thursday and Friday, May 14 and 15. The annual dinner will be held—under the presidency of Sir Hugh Bell, Bart.—in the Grand Hall of the Hotel Cecil on Thursday, May 14. The autumn meeting will be held in Middlesbrough on September 29 and following days.

IN *Engineering* of January 31 there is a sympathetic account of the career of Dr. Coleman Sellers, the eminent American engineer, who died on December 28, 1907, at his residence in Philadelphia in his eighty-first year. He was best known in connection with machine tools, but he will also be remembered for his scheme for utilising the water-power of Niagara Falls, and by his inventions in photography and microscopy.

A CORRESPONDENT asks if the use of wires stretched horizontally at a height of 15 feet or 20 feet in concert halls, churches, and other buildings where the acoustic properties are of the first importance is not based upon erroneous ideas. He expresses the opinion that though the wires are supposed to remedy some fault in the acoustics, they do not produce any useful effect. We are informed that, theoretically, the wires absorb some of the energy and radiate it again in all directions, thus diminishing the amount of regular reflection, constituting echoes, from the walls. But the fraction of the vibrations thus treated is so small that it is difficult to believe the wires have any real, beneficial effect.

MR. H. F. WITHERBY, editor of *British Birds*, informs us that an inquiry is being made into the nature and origin of the disease from which many wood-pigeons have died this winter. The subject is of considerable interest; moreover, possibly the disease, which is very infectious among wood-pigeons themselves, may also be contracted by other birds, and especially game birds. A systematic inquiry into the disease has therefore been undertaken, and schedules of questions have been posted to readers of *British Birds*, the editor of which will be glad to send schedules to anyone who may be in a position to give information on the subject. All the observations will be collated and studied by Dr. C. B. Ticehurst, of Guy's Hospital, who will draw up a full report at a later date.

THE fourth International Congress of Mathematics will be held in Rome on April 6–11. The congress will be divided into four sections. The first section will be concerned with arithmetic, algebra, and analysis, and discussions will be inaugurated by Profs. Arzelà, Capelli, Pascal, and Pincherle. The second section will deal with geometry, and the work will be introduced by Profs. Bianchi and Segre. The third section, covering mechanics, mathematical physics, geodesy, and various applications of mathematics, will be addressed by Profs. Levi-Civita, Luiggi, Pizzetti, and Toja. The fourth section will take up philosophical, historical, and didactical questions, and addresses will be given by Profs. Enriques, Loria, and Vailati. Numerous lectures have been arranged, and among these may be mentioned that by Prof. Forsyth, F.R.S., on the present condition of partial differential equations of the second order, as regards formal integration. Other lectures will be delivered by Profs. Darboux, Hilbert, Klein, Lorentz, Mittag-Leffler, Newcomb, Picard, Poincaré, Veronese, and Volterra. Full particulars of the congress can be obtained from the general secretary, Prof. G. Castelnuovo, 5 Piazza S. Pietro in Vincoli, Rome.

REFERRING to the letter by the Rev. John J. Hampson in our issue for January 30 (p. 295) dealing with "stock frost" or ground ice, Mr. D. O. S. Davies, of the Norwich Technical Institute, reminds us of a volume on the subject of "Ice Formation, with Special Reference to Anchor-ice and Frazil," by Prof. H. T. Barnes, of McGill University, Montreal. Prof. Barnes provides information on the points raised by Mr. Hampson in his letter. The book, a descriptive review of which appeared in the issue of NATURE for January 17, 1907 (vol. lxxv., p. 267), is published in this country by Messrs. Chapman and Hall, Ltd.

THE *South-Eastern Gazette* of January 28 contains an obituary notice of the late Mr. Edward Bartlett, who from 1875 until 1890 occupied the post of curator and librarian of the Maidstone Museum. The deceased naturalist was a son of the late Mr. A. D. Bartlett, the well-known superintendent of the Zoological Society's menagerie in the Regent's Park. In his earlier years Mr. Bartlett travelled as a natural history collector in Upper Amazonia, where he obtained many valuable specimens. Later on, 1863–4, he accompanied the late Canon Tristram to Syria and Palestine, and in 1891 left Maidstone for Sarawak, to act as curator of Raja Brook's museum, a post which he occupied until 1897, when he returned home. Mr. Bartlett edited his father's well-known work "Wild Animals in Captivity," and was himself the author of several papers on natural history subjects.

NO. 13 of the Bulletin of the Imperial Academy of Sciences of St. Petersburg for 1907 contains a paper, unfortunately in Russian, by Mr. D. Dejneka, on the nervous system of the nematode worms.

WE have received copies of two papers published by the author at Lancaster, Pa., as Nos. 1 and 2 of a new serial, *Weber's Archives*, in which the author, Veterinary-Surgeon Weber, claims to have bred from the eggs of the ordinary gnat, *Culex pipiens*, two other species of gnats or mosquitoes, in addition to the normal progeny. "Mutation in Mosquitoes" is the title of the second and larger paper. The earlier one, which contains a preliminary account of the same alleged phenomenon, is a reprint of an article published two years ago in *Natur und Haus*, vol. xv., May, 1907.

TWO papers on the reproductive organs of sharks have recently appeared within a short time of one another. The first, by Mr. Albert Krall, is published in vol. xxxvii., part iv., of the *Morphologisches Jahrbuch*, and devoted specially to the "claspers" on the pelvic fins of the male of *Hexanchus griseus*, and generally to the corresponding organs in other sharks. In the second, which appears in vol. xxxviii., part iv., of the *Zeitschrift für wissenschaftliche Zoologie*, Dr. Victor Widakowich describes the uterus of the spiny dog-fish (*Squalus acanthias*), with remarks on the developmental history of allied species. The structure of the uterus is described in great detail, and a figure given of a portion of its wall containing an embryo.

CONSIDERABLE interest attaches to an account by Mr. C. H. Danforth, published in vol. xxxiv., No. 1, of the Proceedings of the Boston Society of Natural History, of a new genus and species (*Paedoclione doliiformis*) of pteropod mollusc from Casco Bay, Maine. The new form, which was taken in plankton, "does not properly fall under any established family, although perhaps it approaches most nearly the Clionidæ, from which it differs in having an odd number of cephalocones and the entire posterior part of the body filled by the viscera." In life the creatures swam for some time by means of their fins, and then sank for a time below the surface, after which the swimming was resumed. With the exception of numerous vacuoles in the integument filled with yellowish or yellowish-brown fluid, the body is transparent.

THE distribution of the pine-marten in England and Wales forms the subject of an article by Mr. H. E. Forrest in the January number of the *Zoologist*. In the midland

and south-eastern counties of England the species, it appears, became rare during the first half of last century, and in most of these it was exterminated before 1860, although isolated occurrences have been recorded since that date in Hertfordshire, Surrey, and Sussex. In Lincoln, Norfolk, and Suffolk it survived until the 'eighties, and there have been recent occurrences in Leicestershire. The Lake District and the west of north and central Wales are, however, at present the sole strongholds of the species. Many of the isolated occurrences appear to be due to the remarkable degree to which the marten wanders.

IN addition to the well-known fishery of the pearl-oyster, Ceylon, it appears from an article by Dr. A. Willey in *Spolia Zeylanica* for November, 1907, possesses a source of pearl in beds of the "window-pane oyster" (*Placuna placenta*) in the backwaters of the eastern province. These beds occur in the backwaters of two neighbouring divisions of the Trincomali district, one of which includes Lake Tamblegam, the headquarters of the Placuna fishes. As the lease of this fishery recently expired, Mr. Willey was sent to the district to report on the best means of improving the product of oysters. These molluscs, it seems, are liable to be destroyed in large numbers by unusually heavy falls of rain such as took place a year ago; nevertheless, the species is in the main a hardy creature, capable of living for several hours out of water, and of surviving for long periods in earthenware vessels if the water be from time to time changed. No mention is made by the author of the annual value of the pearls yielded by the Placuna fishery. The paper includes an account of cysticercoid larvæ found parasitic in these oysters.

MR. W. TALIEW contributes to the *Bulletin du Jardin Impérial Botanique* (vol. vii., part iii.), St. Petersburg, a paper on the distribution of forests in the district of Starobjelsk, which furnishes evidence that the "steppes" were formerly wooded areas. Mr. A. A. Sapehin discusses the method by which water is absorbed by the sacs in such liverworts as Frullania.

LIEUT.-COLONEL F. BAILEY and Mr. R. C. M. Ferguson both contribute articles to the Transactions of the Scottish Arboricultural Society (vol. xx., part i.) on the Interliever State forest. The purchase by Government of this estate in Argyllshire affords great satisfaction to British foresters but it is hoped that it is only the first step in the policy of acquisition by the State of land for afforestation purposes. The estate, consisting of 12,000 acres, carries very little timber, so that while it affords an opportunity for showing how timber crops can be scientificially grown and for recording data, it will not for many years provide a demonstration forest. It is urged that two wooded areas should be acquired for this purpose, one in the lowlands where hardwoods are cultivated, and one in the highlands stocked with conifers.

IT is a debated question whether it is preferable for science students to undertake practical experiments with instruments of their own construction or to make use of apparatus manufactured by instrument makers. Prof. F. W. Ganong, formerly an advocate of the former method in botanical physiology, now declares in favour of instruments of greater precision, and with this purpose has designed several pieces of apparatus that are being manufactured by Messrs. Bausch and Lomb; a descriptive catalogue can be obtained from their agents in London, Messrs. Staley and Co., Thavies Inn. Among the instruments are a transpiration balance, clinostat, autographic transpirometer, leaf-area cutter and leaf clasp, but the photosynthometer and respirometer will probably be found the most useful on account of the functions they record.

A BATCH of pamphlets issued from the Royal Botanic Gardens, Ceylon, as Nos. 2 to 5 of vol. iv. of the Circulars and Agricultural Journal, has been received. Mr. E. B. Denham, writing on the use and objects of agricultural societies, attaches much importance to the visits of travelling instructors and to the distribution of leaflets printed in the vernacular; also he suggests that the local societies should make it their business to collect agricultural data. In connection with camphor production, Mr. J. K. Nock has prepared a useful circular on propagation. Practical hints are given for preparing the seed beds and raising the seedlings. If good seed is not obtainable, it is recommended to propagate by means of root cuttings. The chief object of a circular by Mr. T. Petch is to direct attention to a stem disease caused by the ascus-bearing fungus *Massaria theicola.* The hyphæ of the fungus fill up the vessels of the wood and cut off the supply of water and salts. The disease can be traced by the discoloration of the wood. A catalogue of plants available for distribution from the gardens has been prepared by the curator, Mr. H. F. Macmillan. The economic list comprises certain spice, rubber, fibre, and drug plants.

WE have received the first number of the *Quarterly Journal of Experimental Physiology*, a new periodical issued under the editorship of Profs. Schafer, Gotch, Halliburton, Sherrington, Starling, and Dr. Waller. The four papers contained in it maintain a high standard; they are:—(1) on the time taken in transmission of reflex impulses in the spinal cord of the frog, by Florence Buchanan; (2) some comparisons between reflex inhibition and reflex excitation, by C. S. Sherrington; (3) the freezing of frog's nerve, with special reference to its fatigability, by John Tait; and (4) on protagon, by R. A. Wilson and W. Cramer. We could have wished that it had been possible to avoid the issue of a new journal, but with so distinguished an editorial committee we presume its appearance is necessary for the advancement of physiological science.

IN the third report to the Gas Engine Research Committee, presented to the Institution of Mechanical Engineers on January 17 by Prof. F. W. Burstall, the results were given of an interesting series of experiments carried out during the past two years on an adapted form of one of the Premier Company's existing types of gas-engine. The engine employed was capable of giving 150 horse-power at a speed of 170 revolutions per minute, the size of the cylinder being 20 inches in diameter with a 24-inch stroke. The diameter of the cylinder was reduced to 16 inches, and an entirely new breech end was constructed with the admission and exhaust valves horizontal. The tests were undertaken to determine the thermal efficiencies based on the indicated horse-power at various compressions, having regard to the richness of the mixture, and to formulate, if possible, the law connecting efficiency and compression. The results of the experiments appear to show that the most economical mean pressure is very considerably below the maximum that can be obtained, and that the highest economies are obtained with a comparatively low maximum temperature. Both these conclusions imply that the engine should not only be subjected to lower pressure, but to lower temperatures as well, and thus many of the difficulties that arise in large engines from rich charges might be avoided, and the maximum pressures kept down to quite reasonable limits. This applies only to the indicated power; the conclusions as to the brake horse-power would be widely different. If, however, the engine is constructed to work only with these moderate pressures and temperatures, the whole of the working parts might be very much lightened, and a good mechanical efficiency obtained with the very moderate mean pressures.

AT the meeting of the Institution of Engineers and Shipbuilders in Scotland on January 21, two papers of considerable interest were presented. In the first Mr. J. J. O'Neill discussed the inter-relation of the theory and practice of shipbuilding, with special reference to the speed-power aspect of the question. He considered that the lengths of the present Atlantic liners warrant the belief that greater power can be obtained, providing that the power their dimensions invite is present. The curves of power also show that the present speeds can be attained on shorter lengths, and that the variations of form involve relatively small gains. The possibilities of the future of the steam turbine, the chief function of which is its capability to obtain greater powers on a given weight than its competitors, widen considerably the vista of engineering practice. With regard to the screw-propeller, the author is inclined to think that, had the same attention been devoted to the screw-propeller problem as has been bestowed on the form of the vessels, greater advantages than the slight variation of form effected would have been secured. In the second paper Mr. I. V. Robinson gave some comparative figures of the cost of power generated by gas and by water. The results show that power generated from blast-furnace gas costs about the same as water-power when the capital cost of the generating station, with or without transmission lines as may be required, is about 18*l.* per horse-power delivered at the consumers' boundary.

THE new French ethnographical review, *Revue des Études ethnographiques et sociologiques*, under the editorship of M. A. van Gennep, starts its career in the number for last month with an excellent programme. Dr. J. G. Frazer contributes a chapter from the new forthcoming edition of the "Golden Bough" on "St. George and the Palilia." The Palilia is a Roman spring agricultural feast, at which the herdsman used to make a sacrifice to Pales and invoked his protection for the flocks, praying him to grant rain for the pastures and to protect the cattle from wolves. In Esthonia, about the same time of the year, a feast is held in honour of St. George, who grants fertility to women and flocks. In eastern Europe the saint seems to represent the old spring god of the Lithuanians, Pergrubius, and, further east, Tammuz or Adonis. With his wide knowledge of peasant rites and ceremonies, Dr. Frazer has no difficulty in establishing the connection between these varied cults of agricultural and pastoral life. This paper is followed by an elaborate sketch by M. M. Delafosse of the Siena or Senoufo tribe, who inhabit the French territory in West Africa in the region adjoining the British Ashanti frontier. M. C. Boreux discusses the decorated pottery of pre-dynastic Egypt. Some reviews and a bibliography complete a publication which promises to be of considerable value to ethnologists.

THE current issue of the Journal of the Scottish Meteorological Society (No. xxiv., third series) contains memorial notices of Dr. Buchan from several men of science, including Prof. Hann (Vienna), Dr. Shaw and Dr. Mill (London), testifying to the enduring value of his numerous and "epoch-making" investigations. Mr. H. Bell contributes an article on thunderstorms at the Ben Nevis observatories and on the Scottish coasts, on which subject Dr. Buchan was recently engaged. Tabular statements show the cases of occurrence of thunder and lightning from 1884 to 1904, together with their seasonal and diurnal range. The atmospheric conditions which determined the displays were of a very complex character, and are not yet fully understood. The same journal contains (1) an interesting article, by Mr. R. G. K. Lempfert, on the present condition of telegraphic weather services in various countries; especial reference is made to the great importance of recent extensions of area due to the exertions of the Danish and Egyptian Governments. (2) Rain-producing east winds and their influence on the summer of 1907, by Mr. R. Richardson; the author considers that one of the principal causes of the phenomenally bad character of that summer was the frequent sudden shifting of the wind to the east.

MM. P. WEISS and V. Planer give the results of their comparison of the energy losses due to hysteresis in iron, steel, and nickel, in alternating and rotating magnetic fields respectively, in the *Journal de Physique* for January. As previous observers have found, the loss in a rotating exceeds that in an alternating field for comparatively weak fields, but the authors find that for electrolytic iron the loss in the rotating field reaches its maximum when the intensity of magnetisation is about 1200, and decreases to zero at intensity 1700. For steel, the maximum occurs at 1000 and the zero at 1600. For nickel the corresponding numbers are 300 and 500 respectively. The energy losses at the maxima are 17,000, 120,000, and 17,000 ergs per c.c. per cycle respectively.

THE small intensity of the electric waves emitted by a sender consisting of a comparatively short vertical wire, to the top of which a long horizontal wire is attached, in the direction in which the latter points, and the great intensity of the waves sent in the opposite direction, was pointed out by Mr. Marconi in 1906, and in the *Physikalische Zeitschrift* for January 15 Dr. J. Zenneck works out the theory of a receiver of the same form. Such a receiver is most sensitive to waves coming from the direction opposite to that in which the horizontal wire points, for then both the vertical and horizontal components of the electrical field are utilised. The best ratio of vertical and horizontal lengths depends on the ratio of the corresponding components of the wave, and on the conductivity of the soil, but in any case the efficiency of the receiver may be increased by attaching a wire to the base of the vertical wire and extending it on or under the surface of the soil towards the arriving waves.

IN a communication to the Royal Academy of Belgium (Bulletin, 1907, No. 6, p. 684) Prof. Walthère Spring gives an account of his further researches on the nature of the allotropic forms of sulphur. Whilst in a previous paper (see NATURE, vol. lxxv., p. 182) he was able to show that the sulphur obtained on decomposing a solution of hydrogen sulphide with sulphur dioxide is a hydrate, S_8,H_2O, it is now demonstrated that the material precipitated by the action of ferric chloride on a solution of hydrogen sulphide is not hydrated, but is a new allotropic form of the element. The new variety has a density which is sensibly the same as that of orthorhombic sulphur, and like the latter dissolves in carbon bisulphide, but it differs from it and from all other known forms of the element in its specific heat. Precisely the same form, giving identical values for the density and specific heat, is also obtained on decomposing an alkaline polysulphide in solution by means of an acid.

In a note published in the *Atti dei Lincei* (vol. xxvi., 2, p. 717) under the title "The Origin of Stereochemistry," Prof E. Paternò points out that in 1869, five years prior to the publication by Le Bel and van 't Hoff of the doctrine of the asymmetric carbon atom, he suggested that if *three* isomeric forms of the compound $C_2H_4Br_2$ actually existed, the fact could be explained by assuming the four affinities of the carbon atom to be directed towards the corners of a tetrahedron. This was the first occasion on which the hypothesis of the tetrahedral configuration of the carbon atom was definitely formulated. Although the validity of Prof. Paterno's claim has already been admitted in some quarters, it is not generally known to chemists that the conception of a tetrahedral carbon atom, the basis of modern stereochemistry, had been proposed earlier than the year 1874, when it was brought forward simultaneously by Le Bel and van t Hoff.

The whole of the mathematical and physical library of the late Prof. A. S. Herschel, F.R.S., and also works from the library of the late Mr. F. Moore, author of books on the Lepidoptera of India and Ceylon, are included in a catalogue just issued by Mr. T. Thorp, Guildford, Surrey, who offers the books for sale.

An enlargement by four diameters of a photograph of the moon taken by Mr. W. Rice with a Goerz telephoto lens, the exposure being three-fifths of a second, has been sent to us by Messrs. G. Philip and Son, Ltd. The photograph was taken twelve hours before the moon was full, and though the enlargement, which is 6 inches in diameter, is not remarkable for any details it shows of lunar features, it gives a real impression of our satellite as a ball in space, this appearance of relief being accentuated by the bright streaks radiating from the crater Tycho near the south lunar pole.

At the anniversary dinner of the Royal Society on November 30 last, Lord Dunedin bewailed the fact that few men of science make any attempt to describe their investigations in language which can be understood by men of culture without special scientific knowledge. This speech, as was pointed out in NATURE (vol. lxxvii., p. 111), gave rise to a correspondence in the *Times*, in which the advantage of increasing interest in scientific work by making the results as widely known as possible was insisted upon in many quarters. A similar necessity has been recognised in America, and an attempt is being made at Columbia University to provide literature of the kind required. The Columbia University Press has arranged to publish in the form of pamphlets a series of twenty-two descriptive lectures in non-technical language of the achievements of science and modern scholarship. We have received copies of the first two pamphlets; the first, on mathematics, is by Prof. C. J. Keyser, and the second, on physics, by Prof. E. F. Nichols. A doubt may be expressed as to whether the language of these lectures will be simple enough for the public for whom they are intended. The pamphlets partake largely of the character of the Royal Institution lectures, reprints of which are often available in this country, and contain terms and ideas which, though simple enough to the reader with some training in science, present difficulty to the student whose education has been chiefly on literary lines. It will be interesting to learn later the extent of the encouragement received by the Columbia University Press. The price of the pamphlets is in every case to be 25 cents.

OUR ASTRONOMICAL COLUMN.

THE DISTORTION OF PHOTOGRAPHIC FILMS IN STELLAR WORK.—In No. 1, vol. i., of the Publications of the Allegheny Observatory (Pennsylvania), Dr. Frank Schlesinger discusses the possibilities of error introduced into photographic star-measures by reason of the distortion undergone by the film during the process of development. He further describes some experiments and measures he has made in order to determine the magnitude of this error. By developing, drying, and measuring a negative in the ordinary way, and afterwards putting it through the developing, fixing, washing, drying, and measuring processes again, he has obtained the data from which he draws his conclusions. Briefly, he finds that this error is much smaller than the error of bisection for good star images, being of the order of one one-thousandth of a millimetre for the kind of plate employed.

TWO HUNDRED NEW DOUBLE STARS.—Lick Observatory Bulletin No. 125 contains a list, and measures, of 200 double stars discovered by Prof. Aitken. This is the eleventh list of its kind, and the stars now announced bring the total of Prof. Aitken's published discoveries up to 1700. Nine fainter companions to previously known pairs are included in the present list, which also contains measures of the unusually bright and close pairs κ Ursæ Majoris and ν^2 Boötis (Aitken, 1585 and 1634) as follows:—

	Date	Angle	Distance	Mag.	Annual proper motion
κ Ursæ Majoris ...	1907·83 ...	283°·2 ...	0″·21 ...	4·0–4·2 ...	0″·079 in 211°·1
ν^2 Boötis	1907·55 ...	237°·0 ...	0″·09 ...	5·5–5·5 ...	0″·04 ,, 246°

A NEW ASTRONOMICAL JOURNAL.—The members of the progressive astronomical society of Antwerp having expressed a desire for a publication which would give the various ephemerides, and a simple account of the astronomical phenomena to be observed from time to time, the council of the society has commenced the publication of the *Gazette astronomique*, which is to appear monthly, and is designed to fill the gap indicated; popular articles on astronomical subjects are also to appear. No. 1 (January 4) contains various ephemerides, notes on phenomena occurring during January, accounts of the recent transit of Mercury, and a series of notes dealing, respectively, with the planets, asteroids, meteors, comets, &c. The annual subscription for this useful publication is three francs, post free in all countries, and all communications should be addressed to "Gazette astronomique," Chaussée de Turnhout, 342, Borgerhout, Antwerp, Belgium.

THE STUDY OF METEOR TRAINS.—The *Monthly Weather Review* (U.S.A.), vol. xxxv., No. 9, contains a suggestive article by Prof. Trowbridge on the utility of the precise observations of meteor-train drifts for the determination of atmospheric currents at altitudes otherwise inaccessible. This altitude, of meteor trains seen at night, ranges from forty-five to sixty-five miles, and Prof. Trowbridge believes that the conditions of pressure and temperature at about fifty-five miles above the earth's surface are possibly peculiarly suitable for the production of trains; careful study may enlighten us as to these conditions. Several recorded trains are illustrated in the article and fully discussed, and the author suggests that valuable results may follow from an organised series of careful observations.

THE ACCURACY OF DOUBLE-STAR MEASURES.—A paper by Prof. Doberck, appearing in No. 4229 of the *Astronomische Nachrichten* (p. 65, January 21), should appeal to double-star observers. In it the author gives the probable constant errors, and the residuals after applying these constant, or the mean, errors to the observations, in position-angle and distance for some fifty past and present observers. The probable errors are based on the comparison of the results of the various observations with the positions calculated from the orbits of thirty double stars recently determined by Prof. Doberck. The effects of difference of colour, which, as Prof. Doberck remarks, must be considerable, are not discussed in the present paper, but the same worker expects to deal with them later. The variations of the probable errors caused by increase of the distance between the components, and by